

## ISIS - Bug #3879

### Point Perspective Projection significantly clips edges of images

2016-03-31 10:08 AM - Kristin Berry

<b>Status:</b>	Closed	<b>Software Version:</b>
<b>Priority:</b>	Normal	
<b>Assignee:</b>	Tyler Wilson	
<b>Category:</b>	API	
<b>Target version:</b>	FY17 Sprint 3	
<b>Impact:</b>	This fix should not have any impact upon ISIS.	
<b>Description</b>		
Projecting New Horizons LEISA images to a Point Perspective projection results in more than half of the image being clipped off around the edges. This problem may also exist for images from other instruments.		
<b>Related issues:</b>		
Related to ISIS - UserTestPlan #4501: Point Perspective Projection significan...		<b>Closed</b>

#### History

##### #1 - 2016-03-31 10:10 AM - Kristin Berry

I spent some time looking into this, but was never actually solved the problem. I suspect that the problem is somewhere in PointPerspective::XYRange()

##### #2 - 2016-03-31 03:50 PM - Kristin Berry

Source changed to external because problem was reported by Will Grundy, but can be reproduced internally.

##### #3 - 2016-04-01 04:07 PM - Tammy Becker

- Category set to Applications

- Status changed from New to Acknowledged

##### #4 - 2016-07-12 07:45 AM - Stuart Sides

- Category changed from Applications to API

- Target version set to 3.4.13 (FY16 R3 2016-08-31 Aug)

##### #5 - 2016-07-19 05:43 PM - Kristin Berry

- Assignee set to Kristin Berry

##### #6 - 2016-07-19 10:49 PM - Kristin Berry

- Status changed from Acknowledged to In Progress

##### #7 - 2016-09-30 11:19 AM - Kristin Berry

- Status changed from In Progress to Acknowledged

- Assignee deleted (Kristin Berry)

This problem only appears with the full LORRI basemaps (-90 -> +90 latitude; 0 -> 360 degree longitude) when running map2map. Projecting individual, non-mosaiced cubes with cam2map works as expected.

Even hard-coding a larger XYRange did not fix this problem, so it is actually (I think) something wrong with the projection itself.

Please contact me ([kberry@usgs.gov](mailto:kberry@usgs.gov)) for more information, if you've been assigned this ticket, and I haven't updated this with more information. (i.e.

if you are reading this message. I have a google-doc I made for myself to keep notes, but it needs a bit of cleanup/editing-for-clarity before pasting its contents here.)

**#8 - 2016-10-03 10:50 AM - Stuart Sides**

- Target version deleted (3.4.13 (FY16 R3 2016-08-31 Aug))

**#9 - 2016-11-01 10:27 AM - Tammy Becker**

- Related to UserTestPlan #4501: Point Perspective Projection significantly clips edges of images added

**#10 - 2016-11-10 10:18 AM - Jason Laura**

- Target version set to FY17 Backlog

**#11 - 2016-11-10 11:50 AM - Jason Laura**

- Story points set to 4

**#12 - 2016-11-10 11:50 AM - Jason Laura**

- Target version changed from FY17 Backlog to FY17 Sprint 3

**#13 - 2016-11-14 02:00 PM - Tyler Wilson**

- Assignee set to Tyler Wilson

**#14 - 2016-11-14 02:04 PM - Tyler Wilson**

- Status changed from Acknowledged to In Progress

**#15 - 2016-11-14 04:21 PM - Stuart Sides**

- Status changed from In Progress to Assigned

**#16 - 2016-11-14 04:21 PM - Stuart Sides**

- Status changed from Assigned to Acknowledged

**#17 - 2016-11-14 04:22 PM - Tyler Wilson**

- Status changed from Acknowledged to In Progress

**#18 - 2016-11-17 01:02 PM - Tyler Wilson**

- Impact updated

Kristin was correct. The XYRange() function in PointPerspective.cpp was incorrect, and needed to be modified. To the reviewer: please do a svn diff |less in this directory:

\$ISISROOT/src/base/objs/PointPerspective to view my changes.

The user test plan is one directory above \$ISISROOT in the userTestPlan directory.

The script you want to run is: cam2map\_ptpersp\_m03879\_testplan\_1.csh The file:

cam2map\_ptpersp\_m03879\_testplan\_1.txt describes the desired output for this fix to pass the test.

**#19 - 2016-11-17 01:03 PM - Tyler Wilson**

- Status changed from In Progress to Resolved

**#20 - 2016-11-18 12:47 PM - Ian Humphrey**

- Status changed from Resolved to In Review

**#21 - 2016-11-18 01:23 PM - Ian Humphrey**

- Status changed from In Review to Feedback

~~I ran through the test plan and I got results that were not the expected results, I think I might have to ask about this in person.~~

~~Also, the changes should be made in the IPCE branch and not trunk.~~

Review suggestions:

~~\* Make sure to add history comments to TProjection.h and PointPerspective.h~~

~~\* I might consider adding a comment to the changed line in PointPerspective.cpp (182)  
if (abs(g) < (1.0 / m\_P))~~

~~\* I would remove the cout's in TProjection.cpp and PointPerspective.cpp that were added for debugging.~~

**#22 - 2016-11-21 12:36 PM - Ian Humphrey**

Disregard previous review.

Suggestions:

*Orthographic.cpp:*

- Remove the cout's in Orthographic::XYRange(minX, maxX, minY, maxY)

*PointPerspective.h*

- Consider updating the history date to the date that you commit the changes

*PointPerspective.cpp*

- In the constructor, there is a lot of whitespace that should probably be removed that occurs before the catch clause near the end of the constructor.
- (Optional) Consider putting an internal history comment on the changes you made to PointPerspective::SetGround(const double lat, const double lon).
- In SetGround(const double lat, const double lon), there is an if statement that was added: if (sqrt(x\*x+y\*y)> projectionRadius). I would consider putting whitespace between the arithmetic operators and putting whitespace before the > operator.
- In SetGround(const double lat, const double lon), in the if statement mentioned above, there is an assignment: m\_good =false. I would put whitespace after the assignment operator.
- I would consider putting an internal history comment on the XYRange method saying what was changed.

*PointPerspective unitTest.cpp*

- There is a lot of whitespace at the end of the unitTest before the catch clause that should probably be removed.
- There may need to be os specific truth data for the new systems depending on the results of the test.
- The old os specific truth data may also need to be removed.

**#23 - 2016-11-21 12:42 PM - Ian Humphrey**

Re-ran the user test plan, looks good to me!

**#24 - 2016-11-22 01:14 AM - Tyler Wilson**

- *Status changed from Feedback to Resolved*

**#25 - 2016-11-22 10:53 AM - Ian Humphrey**

- *Status changed from Resolved to In Review*

**#26 - 2016-11-22 10:54 AM - Ian Humphrey**

- *Status changed from In Review to Closed*

Make sure to get rid of cout's in Orthographic.cpp.